

## 28.- Cross-flow ceramic membranes with permeate conduits

<b>Title and name of product or technology</b>	
CoMeTas CoMex – Cross-flow SiC ceramic membranes with permeate conduits	
<b>Abstract</b>	
Silicon Carbide (SiC) ceramic membrane elements utilizing cross-flow filtration principle. The ceramic membranes are available for MF and UF. The membrane elements show superior flux, filtration properties and energy/construction savings compared to traditional ceramic membranes. An increase of five (5) times the flux of traditional SiC cross-flow membrane elements has been recorded. The membranes are suitable in a vast variety of applications where cross-flow is applied today, i.e. produced water, waste water, industrial processes, ballast water etc.	
<b>Description including main features/advantages</b>	
The membrane elements provide high filtration capacity per unit volume. One element (Ø144mm x L865mm with 0,04 micron pore size) yields 23 m <sup>3</sup> /h permeate flux at 0.2 bar TMP (water at 20°C). SiC allows for harsh operating conditions: chemically resistant in pH 0-14, temperature resistant +1000°C and mechanical robust with TMP up to 10 bar.	
<b>Innovative aspects</b>	
The ceramic membrane is a further development of existing cross-flow membrane elements. The new improved design with permeate conduits excel with higher energy efficiency compared to traditional cross-flow systems due to higher flux rates, while maintaining the robust filtration properties. The membrane elements are an ideal alternative to traditional cross-flow membranes in existing and new installations. Installed Comex membranes elements will potentially reduce power consumption in membrane installations worldwide.	
<b>Current and potential industrial users/domains of application</b>	
The membranes are currently installed at operating sites in Canada (oil sand) and The Netherlands (surface water). Potential industrial fields of application are: Oil and gas, waste water treatment, industrial processes, water supply, etc.	
<b>Current state of development</b>	
The membrane elements are manufactured in varying geometries with different pore sizes according to the application. The membrane elements have been tested in-house and externally. The membranes still need to be tested on a number of applications like sea/surface water and industrial waste waters.	

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